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**(54) Adaptive multimedia service**

(57) The invention is characterized in that parts of a multimedia service which is executed in a mobile terminal is structured in form of different software components. The structure implies that an operator who provides the service is given possibility to distribute the service in different parts via a data connection, control channel, to a user terminal. This implies that the service

is divided into a number of software components such as control application, applications for video, audio, data etc, and a service function. By structuring the service in this way, the operator can tailor and, when applicable, upgrade a multimedia service in a user terminal by loading down, via the control channel, different versions of software components.

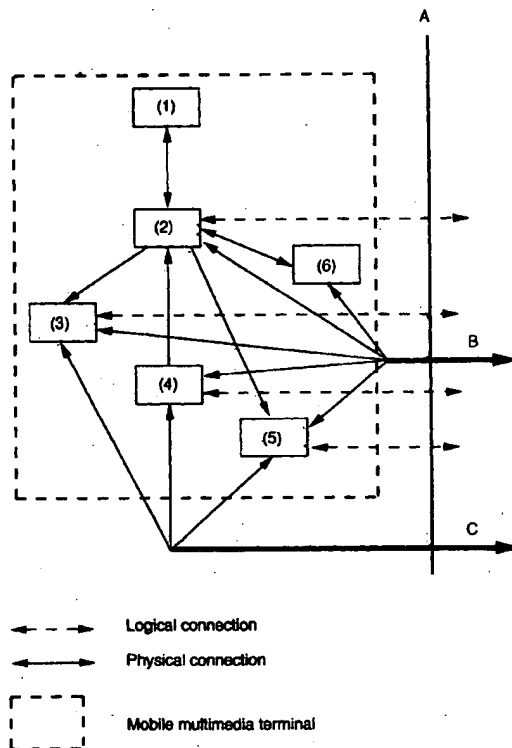


Fig. 1

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**Description****FIELD OF THE INVENTION**

The present invention relates to a device and a method at a mobile telecommunications system or data communications system which makes possible that one in said system provided multimedia service can be changed to fit the need of different users and geographical areas within which said users may be in said system.

**PRIOR ART**

Multimedia services are very complex, which implies that it is very important that they both can be adapted to the need of a user and to the conditions of the carrier network.

In an environment with competing operators of multimedia services it is important that the operators get a possibility to create a distinctive image for themselves in spite of the fact that they maybe together utilize the same access network and carrier network.

One aim with the present invention consequently is to attend to that the part of the mobile multimedia service which is implemented in software in the mobile terminal can be updated and adapted to specific user conditions.

Another aim with the present invention consequently is to attend to that one utilizes the frequency bandwidth of the mobile channel in an optimal way. This is of course of the greatest importance when the mobile channel is utilized together by a number of different users and operators.

**SUMMARY OF THE INVENTION**

The above mentioned aims are achieved with a device and a method which is set out in the characterizing part of the patent claim 1 respective patent claim 6.

The present invention gives rise to a lot of different advantages such as, for instance:

- an operator can offer a tailored mobile multimedia service connected to a user's identity, a user's wishes or geographical position by loading down different versions of software components. In this way, for instance different handover algorithms and video encoders can be selected depending on geographical position.
- operators can design their mobile multimedia services independent of each other in spite of the fact that they are using the same carrier network and access technology, and in addition load down the software which constitute the implementation of the service.
- an operator can control how a mobile terminal utilizes its carrier network.
- the costs at a change of a service will be comparatively low.

- a rapid effect is achieved by a changed service.

**BRIEF DESCRIPTION OF THE DRAWING**

In the following a detailed description of an embodiment of the invention is given with reference to the only drawing.

Figure 1 shows the construction of a mobile multimedia terminal according to the present invention.

**DETAILED DESCRIPTION OF AN EMBODIMENT OF THE INVENTION**

The invention describes how the parts of a mobile multimedia service which is executed in a mobile terminal can be structured in the form of software components. This structure implies that an operator which provides the service is given a possibility to distribute the service part by part via a data transmission facility (control channel) to a user terminal when there is a need. In mobile connections where one has to utilize available bandwidth very efficiently, it is important that one only distributes the software components when there is a need (for instance at a new version) and that one by the suggested structure only need to distribute a part of the software (a software component).

This involves that one utilizes the bandwidth of the control channel in an optimal way by only transmitting the part of the multimedia service which has to be transmitted, instead of, as in the previous technology, transmit the whole multimedia service packet.

In the following now will be described how the mobile terminal in Figure 1 is constructed and how it functions.

The mobile terminal includes a number of units 1, 2, 3, 4, 5, 6 which each can be updated with new software. These units are the control application unit 1, the service function unit 2, the video application unit 3, the audio application unit 4, the data application unit 5, and the access function unit 6. Each unit consequently relates to a special software component.

A mobile multimedia service which is executed in the mobile terminal in Figure 1 consequently is divided into the following software-components based on different functional contents:

1. The control application 1, via which a user can control the multimedia service and get information of its behaviour.
2. Applications such as for instance video 3, audio 4 and data applications 5. These can both include functionality to communicate with the world around (for instance with a user or corresponding application at another user) and internal processing of incoming or outgoing information.
3. The service function 2 which controls the behaviour of the multimedia service, which also includes how the service function 2 of the mobile terminal

communicates with the service function which is in the fixed network (which is administered by an operator) and service logic in other terminals. The service function controls the applications 3, 4 and 5 based on the user's wishes and the operator's service design.

4. The access function 6 which includes for instance logic which handles signalling towards control functions in the fixed network which are needed to establish a connection, control and surveillance of the bandwidth utilization of the mobile terminal and handover algorithms.

These units 1-6 which executes their specific software components are strongly connected to each other and exchange information with each other in form of signals. By the operator distributing all parts which the mobile multimedia service consist of, he/she also will be responsible for that the information exchange between the software components will function.

By the different parts of the mobile multimedia service being implemented in form of software, they also can be distributed to the user via a control channel. At start this control channel is first established, on which the mobile terminal can check version number for the software components which are stored in the mobile terminal. For the software components the version numbers of which are not in accordance with the version number the operator signals, new software components are loaded down to the mobile terminal.

There also shall be a possibility to load the mobile terminal with the above said software components without using a radio channel, for instance via an Ethernet-connection or CD-ROM-disk.

To sum up, one can say that the invention in brief is characterized in that parts of a multimedia service which are executed in a mobile terminal are structured in form of different software components. The structure implies that an operator which provides the service is given possibility to distribute the service in different parts via a data transmission facility, control channel, to a user terminal. This means that the service is divided into a number of software components such as control application, applications for video, audio, data, etc and a service function. By structuring the service in this way, the operator can tailor and, when appropriate, upgrade a multimedia service connected to a user's identity, wishes or geographical position, by loading, via the control channel, different versions of software components.

The above described is only to be regarded as an advantageous embodiment of the invention, and the scope of protection is only defined by what is indicated in the following patent claims.

#### Claims

1. Device at a mobile telecommunications system or

data communications system which makes possible that one in said system provided multimedia service can be changed to fit the need of different users and geographical areas within which said users can be in said system,

characterized in that it includes just any number of units (1, 2, 3, 4, 5, 6), at which in each of said units are stored, updated and executed specific software components, which correspond to parts of a complete multimedia service, based on the functions of said units.

2. Device according to patent claim 1, characterized in that said software components corresponding to a part/parts of a multimedia service, or a complete multimedia service, are transmitted by an operator via a control channel and implemented in said units (1, 2, 3, 4, 5, 6).

3. Device according to patent claim 2, characterized in that said units consist of a control application unit (1), a service function unit (2), a video application unit (3), an audio application unit (4), a data application unit (5) and an access function unit (6).

4. Device according to patent claim 3, characterized in that said control application unit (1) is used by the user to control the mobile multimedia service and obtain information about the behaviour of said service, said video (3), audio (4), data application units (5) contain functionalities to communicate with the world around and internally process incoming or outgoing information, said service function unit (2) controls the behaviour of the mobile multimedia service and controls the application units (3, 4, 5) based on the wishes of said users and the service construction of said operator, said access function unit includes logic which attends to signalling to the fixed network, which is needed to establish a connection, control and surveillance of the bandwidth utilization of the mobile terminal and to decide which handover algorithm that is suitable.

5. Device according to any of the previous patent claims, characterized in that said units (1, 2, 3, 4, 5, 6) in said mobile terminal are loaded with said software components via an Ethernet-connection or a CD-ROM-disk.

6. Method at a mobile telecommunications system or data communications system which makes possible that one in said system provided multimedia service can be changed to fit the needs of different users and geographical areas within which said users can be in said system,

**characterized** in that said, by an operator provided, multimedia service is structured in form of just any number of software components, at which said operator distributes said multimedia service in different parts corresponding to said software components via a control channel to a mobile user terminal. 5

7. Method according to patent claim 6, **characterized** in that said multimedia service is divided into a number of software components, such as control applications, applications for video, audio, data, service function applications and access function applications. 10

8. Method according to patent claim 7, **characterized** in that said operator upgrades or transmits said multimedia service to a mobile user terminal by, via the control channel, only loading down the software component or components which are required for that said terminal shall obtain requested multimedia service. 15 20

9. Method according to patent claim 8, **characterized** in that said mobile terminal is loaded with said software components via an Ethernet-connection or a CD-ROM-disk. 25

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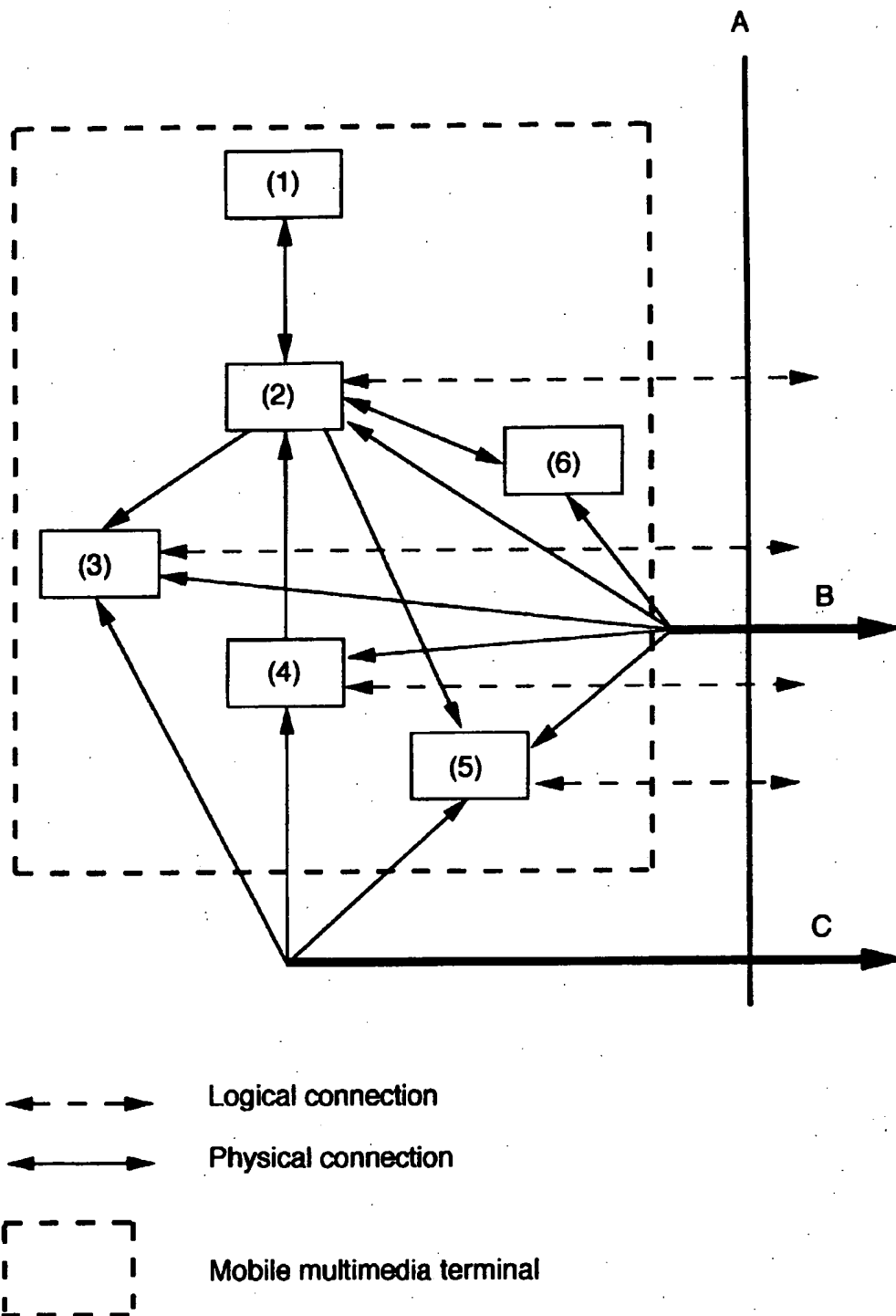
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**Fig. 1**

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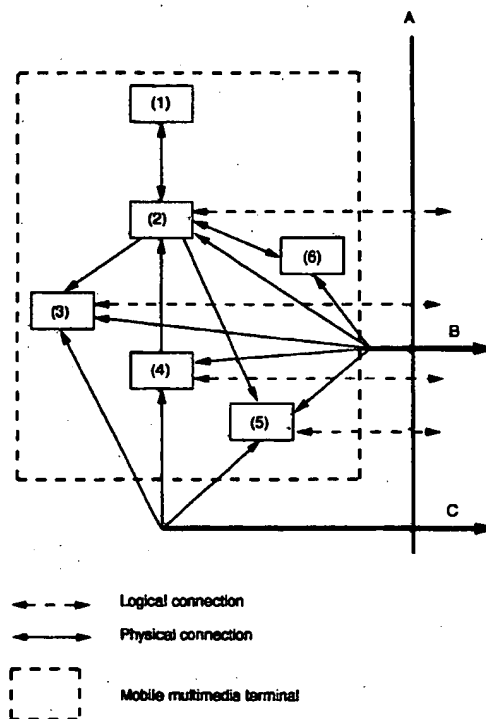


Fig. 1

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## EUROPEAN SEARCH REPORT

Application Number  
EP 97 85 0034

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 459 344 A (CIT ALCATEL) 4 December 1991 * column 1, line 1 - line 22 * * column 1, line 45 - column 2, line 25 * * column 4, line 39 - line 46 * ---	1,2,6	H04Q7/22 H04Q7/32
X	WO 93 16550 A (BELL ATLANTIC NETWORK SERVICES) 19 August 1993 * page 10, line 5 - page 11, line 24; figures 3,5 * ---	1,5	
A	WO 92 17943 A (MOTOROLA INC) 15 October 1992 claims 1,2,3,4 * page 11, line 26 - line 33 * -----	1,6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H04Q H04M
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>16 April 1999</b>	Examiner <b>Dionisi, M</b>
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/92 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 97 85 0034

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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16-04-1999

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82